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ABSTRACT

This paper considers what happens when research-based strategies are attempted outside the context of the original research and questions whether positive findings from research studies can be generalized to real-world settings. Prevention programs within a school system were identified and an activities questionnaire was developed to measure each of the hypothesized factors leading to high implementation. Over 17,000 prevention activities were sampled. Data on the quality of implementation came from 3,700 reports on 14 different types of program activities that were obtained from 550 schools. The results suggest that attention needs to be given to help raise the quality of implementation of prevention programs. In conclusion, there is plenty of room for improvement in the quality of implementation. The effectiveness of prevention activities can most likely be boosted if ways can be found to improve the quality of what schools are already doing. Improving training, supervision, structure, and availability of information can broadly improve the quality of school-based prevention of problem behaviors. The results also suggest that prevention interventions are most likely to be well implemented if they are integrated with the regular school program and initiated by school insiders. (Contains 9 references and 10 figures.) (JDM)

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School Climate, Population Characteristics, and Program Quality

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August, 2000

Paper prepared for presentation at the annual meeting of the American Psychological Association, Washington, D.C., August 4, 2000. This paper is abstracted from a longer report of the National Study of Delinquency Prevention in Schools (Gottfredson, Gottfredson, Czeh, Cantor, Crosse, and Hantman, 2000). This research was supported by grant no. 96-MU-MU-0008 from the National Institute of Justice, U.S. Department of Justice. Additional support was provided by grant no. 98-JN-FX-0004 from the Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice. Westat researchers assisted with the research under contract from the U.S. Department of Education. Opinions expressed are the author's and do not necessarily reflect the positions or policy of any sponsor.

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The 1990's have been a period of great optimism about prevention. Several recent reviews of the prevention literature have concluded that at least some forms of prevention are "effective" in reducing delinquency and substance use. Federal agencies are busy disseminating pamphlets and various how to guides on "proven" prevention strategies.

For a number of years, Gary Gottfredson and I have been interested in what happens when these research-based strategies are attempted outside of the context of the original research. In one three-year study of a discipline management intervention (Gottfredson, Gottfredson, and Hybl, 1993), we documented considerable variability in the quality of implementation across the six participating schools, and found that the size of the positive effects on student behavior outcomes was a function of the quality of implementation. In a subsequent demonstration project involving only one troubled urban middle school (Gottfredson, Gottfredson, and Skroban, 1998), we attempted to implement the very same prevention strategies that had been highlighted in research reviews as especially effective for reducing substance use and violence. We incorporated several of these programs into a set of courses to be delivered by regular school teachers to all students in the school. After a four-year struggle to get these in place, we concluded that the program was never fully implemented, and as implemented it had no discernable effects on substance use, any other form of problem behavior, or even any of the several predictors of problem behavior we measured.

Our observations during these prevention projects and several others only served to increase our interest in understanding factors related to variability in implementation. We began to suspect that the positive findings from research studies might not generalize to real-world settings, at least not the type of places we had been selecting for our work. I think we also wanted to assure ourselves that it was not just everything *we* did that failed – that weak implementation was a more general problem. As we dug deeper, we began to find snippets of evidence to support the belief that prevention research results do not seem to be highly generalize-able to natural settings.

We saw, for example, in Lipsey's (1992) meta-analyses of prevention and treatment programs that programs run by researchers have larger effects than programs not run by researchers. And evidence from Nan Tobler's (1992) meta-analysis of evaluations of drug prevention programs showed that the most effective programs were run by somebody other than the regular classroom teachers.

We found some useful work by Gil Botvin and his colleagues (Botvin, Baker, Dusenbury, Tortu and Botvin, 1990) that demonstrated huge amounts of variability in the implementation of his substance abuse prevention program, Life Skills Training. His team carefully measured the amount of the LST curriculum delivered after teacher training. The percentage of the materials covered in actual implementation varied

widely from school to school – from 27% to 97%, with an average of 68%. Only three-fourths of the students were exposed to at least 60% of the program. Botvin also showed that when the program is delivered incompletely, positive effects are not found. In fact, he typically excludes from his outcome studies those classrooms which delivered less than 60% of the program.

All of this pointed to the same tentative conclusion – that the strength and integrity of program implementation matters, and that the results of research studies of prevention may not generalize to everyday situations. But it was clear that we were only looking at a few pieces of a much larger puzzle, and that more research into the issue of implementation was needed.

As a first step in developing the instruments for the study, we collected information about existing programs from practitioner handbooks and other publications, research articles, funding agency records, and so on and developed a classification of prevention services that are provided by or in schools. The long list of activities discovered through this process is shown in Figure 1. We wanted to be sure to ask schools about all of these different activities so that we could describe the entire range of possible prevention activities. Next, based on existing literature on variability in implementation (mostly from studies of educational reform efforts), we developed hypotheses about factors leading to successful program implementation. These are shown in Figure 2. Our over-arching hypothesis is that we would observe a "Matthew Effect," that is, that the schools with the most challenging problems would benefit the least from prevention programs because the quality of implementation would suffer in these schools.

We learned in Phase 1 of the study (during which we asked principals to report about the number and types of prevention activities in place in their schools) that the typical school has 14 different unique prevention activities going on at once! Actually, this understates the number of prevention activities because it includes only the fourteen categories of discretionary prevention activities we asked about. That is, it excludes such activities as school-wide discipline, which all schools have, and architectural innovations.It is also a low estimate because we included on the questionnaire booklet spaces for only five different programs of each type. Each of the 14 different types of prevention we asked about were claimed frequently, with prevention curricula being the most popular – used in 76% of schools, and "Youth roles in regulating and responding to conduct" – mostly peer mediation programs and student courts – used in 40% of the schools. This suggests that we need more research on a wider range of school-based prevention strategies. The wide variety of programs currently in place in schools contrasts sharply with the relatively narrow range of strategies that has been studied rigorously. We know little or nothing about the effectiveness of most of the strategies currently in use in schools.

Is all of this prevention activity useful? We expect that it depends upon the *quality* of implementation of each activity. If the consequence of having more activities is to implement each one less rigorously, it is probably not useful to have so many different

activities. The remainder of my talk addresses the quality of implementation of these prevention activities.

The data on program quality for the first fourteen categories of prevention come from the activity questionnaires. We developed a tailored questionnaire for each prevention activity to measure each of the hypothesized factors leading to high implementation as well as several different indicators of the quality of implementation. It was necessary to tailor these surveys because indicators of quality are different across different types of prevention. For example, a high-quality behavior modification program would look very different from a high quality security and surveillance program.

We randomly sampled within school from the over 17,000 prevention activities named by principals in Phase 1. We sampled one activity from each of the first fourteen categories of prevention and selected with certainty all D.A.R.E. and peer mediation programs for closer scrutiny. This resulted in a sample of just over 8,000 prevention activities. Of these, 10% no longer existed by the time we asked program coordinators to describe the programs several months later.Of the sampled activities for which we expected a response, we received only 3,691 (or 52%) completed coordinator surveys.

The data on quality, then, come from approximately 3,700 reports completed by program coordinators from about 550 schools on fourteen of the different types of program activities.

We developed 8 different indicators of program quality. These can be grouped into the three major categories shown in Figure 3. Most of these indicators are self-explanatory, but the "best practices – content and methods" score require explanation.

Each of the activity questionnaires began with a question asking about the specific content of the activity. For prevention curriculum, for example, the booklet has a list of several topics that might be covered in the curriculum, ranging from religious teachings to self-esteem. This list contained a number of topics that had been shown in previous research to be related to problem behavior and had been included in successful prevention curricula. Figure 4 shows these topics. We scored each program activity as to the percentage of these desirable topics that were claimed by the program coordinator. We scored "best practices – content" in a similar fashion for all program categories for which prior research provided some guidance about what content had been shown to be effective.

We used the same strategy to score the methods used in the program or activity. Figure 5 shows the methods that were keyed as desirable for behavior management programs.

Our report shows how each of these dimensions was measured and shows scores on each of these 8 dimensions of quality, by school level and location, and program type. We needed some way to boil all of this down to a bottom line. So, for each quality indicator for each program, we rated whether or not the level of implementation was "adequate." We selected a cut-point for this rating such that an adequate rating denoted a level of implementation that might be expected to register effects on problem behavior – or at least we had some evidence that it had in the past. Figure 6 shows some examples of the cut-points we used for different types of prevention. We selected these cut-points by examining studies of programs in each category that had shown some positive effect on a measure of problem behavior, and setting the cut-point to be consistent with those studies. So, for example, we knew LST (Botvin et al., 1990) had registered effects on substance use and it had 16 sessions, so we selected 16 as the cut-point for the number of sessions for the prevention curriculum activity program type. And, although there have been only a handful of studies of mentoring, the Big Brother/Big Sister evaluation showed some positive effects and involved weekly contact between the mentor and mentee, so we chose 52 as the number of sessions below which the program would be considered "not adequate."

Figure 7 shows the percentage of attributes judged "adequate" for each activity type. We found that the quality of prevention programs in schools is low. For all types of programs, the mean proportion of adequacy criteria met is only .57. This means that for the average activity, only 57% of the indicators of quality were judged to be sufficiently strong to be expected to lead to a measurable difference in the desired outcomes. The summary index ranges from a low of .42 for services or programs to family members to .73 for security and surveillance activities.

These results suggest that we need to attend to raising the quality of implementation of prevention programs in general, but they do not convey a sense for the large amount of variability in program implementation from activity to activity, even among activities of the same type. This is perhaps the most important finding from our national study. The percentage of variance in one of the quality indicators – the level of use, for example, that lies *between program categories* is only 5%. This means that most of the variability in quality is *within program category*. Another, perhaps more intuitive way to convey this point is to show examples of specific programs of the same type which differ in their quality of implementation. Figures 8 and 9 show what similar programs look like when implemented in two different schools. The first is a school planning intervention. You can see that in School A, school personnel are engaged in this activity only from time to time, while in school B they are engaged on a regular basis. In school A, the activity lasts a week, in school B, at least a year. In school A, students and staff participate one or twice a year, in School B, daily. And so on. The next overhead shows the characteristics of two similar behavior management interventions, both of which target high risk youths using behavioral strategies. But in school C, the activity lasts a month, and school D it continues for more than a school year. In school C, students participate monthly or less, while in school D, they participate more than once a day. In school C, none of the research-based methods are

used, and in school D, 88% are. Both of these types of prevention are effective according to the research summaries (Gottfredson, 1997; Gottfredson, Wilson, and Najaka, forthcoming), but it is likely that only the more strongly implemented model really works.

Finally, we tested our hypotheses about the predictors of strength of program or activity implementation at the school level by reporting the aggregate-level correlations between characteristics of schools and schools' prevention activities and the average quality of implementation in those schools. This activity generated hundreds of correlations, which are summarized in great detail in the full report. Figure 10 shows the bottom line from these analyses: A small number of predictors of the quality of prevention activities in schools predicted several of our indicators of program quality and quantity. These include the amount and quality of training, supervision, principal support for prevention activities, structure, the use of multiple sources of information (including district or other experts) in selecting activities to implement, integration of prevention as part of the regular school program, and local responsibility for initiating the activity.

Conclusion

Implementation varies a great deal from activity to activity. We see a wide range of implementation scores for each type of activity and on each dimension of quality, but the typical program receives a grade of "C" or better only on 57% of all of its quality dimensions. So there is plenty of room for improvement in the quality of implementation, and most likely the effectiveness of prevention activities can be boosted if we can find ways to improve the quality of what schools are already doing.

There is every reason to expect that improving training, supervision, structure, and the availability of information can broadly and substantially improve the quality of school-based prevention of problem behavior. The present results also suggest that prevention interventions are most likely to be well implemented – and therefore have greater prospect of effectiveness – if they are integrated with the regular school program and initiated by school insiders.

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Figure 1

The Classification of Prevention Activity

1. Prevention curriculum, instruction, or training
2. Behavioral or behavior modification interventions
3. Counseling/social work/psychological/therapeutic interventions
4. Individual attention/mentoring/tutoring/coaching
5. Recreational, enrichment and leisure activities
6. Referral to other agencies or for other services
7. Improved instructional methods or practices
8. Improved classroom management methods or practices
9. Distinctive culture or climate for interpersonal exchanges – or improvements to intergroup relations or interaction between school & community
10. Use of external personnel resources in classrooms
11. Youth roles in regulating and responding to student conduct
12. School planning structure or process – or management of change
13. Security and surveillance
14. Services to families
15. Rules, policies, regulations, laws, or enforcement
16. Provision of information
17. Reorganization of grades, classes, or school schedules
18. Exclusion of weapons or contraband
19. Alter school composition
20. Training or staff development intervention
21. Architectural features of the school
22. Treatment or prevention interventions for administration, faculty, or staff

Figure 2

Hypothesized Factors Leading to Successful Program Implementation

The following foster successful implementation of prevention programs:

- ★ Organizational capacity (morale, history of few failed programs, staffing stability)
- ★ Leadership and staff traits, past accomplishments
- ★ Budget and support
- ★ Organizational support (training, supervision, principal support)
- ★ Program structure — manuals, implementation standards, quality control mechanisms
- ★ Integration with normal school operations, local initiation, local planning, local information use
- ★ Program feasibility — match between program design features and regular activities of the implementing school
- ★ Little disorder

> *"For whoever has, to him more will be given, and he will have abundance; but whoever does not have, even what he has will be taken away from him."* Matthew 13:12

Figure 3

Measuring Program Quality – Three Groups of Indicators

Technical Quality:

- ★ % "best practices" used: content of activity
- ★ % "best practices" used: methods
- ★ Intensity – Number of lessons/sessions, duration, and frequency of student participation

Extensiveness of Application:

- ★ Level of use by school personnel
- ★ Frequency of staff participation
- ★ Frequency of program operation

Extensiveness of Student Exposure:

- ★ Ratio of program providers to students in the school
- ★ Proportion of students exposed or participating

Figure 4

Measuring Best Practices (Content) – Prevention Curriculum, Instruction or Training

Topics Covered

- Social influence (recognizing & resisting, refusal skills)
- Social problem solving skills (identifying problems, generating alternatives, etc.)
- Self-management (goal setting, self-monitoring, self-reinforcement)
- Attribution training
- Communication skills (interpreting and processing social cues, nonverbal communication, negotiating)
- Emotional control
- Emotional perspective taking

Instructional Strategies

- Behavioral modeling
- Role playing
- Rehearsal and practice of skills
- Use of cues to remind individual to display a behavior

Figure 5

Measuring Best Practices (Methods) – Behavioral Programming or Behavior Modification

- Different specific behavioral or educational goals for different individuals or groups
- Always involves a method of monitoring or tracking behavior
- Always tracks behavior for a period of time before attempting to change it
- Always has specific written behavioral goals
- Always makes specific rewards or punishments in response to specific behaviors part of a written behavioral plan
- Tracks and responds to behavior daily or more often
- If student behavior does not change, different reinforcers or a different schedule are sought
- When desired behavior change occurs, rewards are faded (given less frequently) or made more difficult to earn

Figure 6
How Was the "Adequacy" of Programs or Activities Judged?

Example: Prevention Curriculum, Instruction or Training

- ☐ One or more persons conducting on a regular basis
- ☐ 70% or more of content "best practices" used
- ☐ 70% or more of method "best practices" used
- ☐ Contains 16 or more lessons
- ☐ Duration is longer than 1 month
- ☐ Occurs at least once weekly

Example: Behavioral Programming or Behavior Modification

- ☐ One or more persons conducting on a regular basis
- ☐ 70% or more of content "best practices" used
- ☐ 70% or more of method "best practices" used
- ☐ Students participate at least daily

Example: Mentoring

- ☐ One or more persons conducting on a regular basis
- ☐ 70% or more of content "best practices" used
- ☐ 70% or more of method "best practices" used
- ☐ 52 or more "sessions"
- ☐ Duration is at least one school year
- ☐ Sessions are at least weekly

Figure 7

A Score Card on Prevention Activities in Schools: Percentage of Attributes Judged "Adequate"

Activity type	%
Curriculum, Instruction, or Training	57
Behavior Programming/Modification	47
Counseling, Social Work, Psychological	45
Mentoring/Tutoring/Coaching	57
Recreation, Enrichment or Leisure	51
Improved Instructional Practices	59
Classroom Organization or Management	71
Change Expectations for Behavior	64
Intergroup Relations/School-Community	56
School Planning Structure/Change Process	71
Security & Surveillance	73
Services for Family Members	42
Use of External Personnel in Classroom	51
Youth Participation in School Discipline	69

Figure 8
High and Low Quality School Planning Interventions

Attribute	School A	School B
Level of Use by School Personnel	One or more person participating from time to time	One or more person is conducting activity on a regular basis
Duration	One week	At least a full school year
Frequency of Participation – Students and Staff	Once or twice per school year	Daily
Responsibility for Activity	Principal and counselor	Broad range of school staff, police, and community members
Training	Short demo.	2-3 days of training
Role & Accountability	Participation is voluntary; participants not held accountable	Required; participants are held accountable for the activity

Figure 9

High and Low Quality Behavior Modification Interventions

Attribute	School C	School D
Level of Use by School Personnel	One or more person has been trained	One or more person is conducting activity on a regular basis
Duration	One month	> One school year
Frequency of Participation – Students	Monthly or less	More than once per day
Percentage of Students Participating	8%	3%
Best Practices: Content	43%	100%
Best Practices: Methods	0%	88%

Figure 10

What Are the Most Important Predictors of Quality and Extensiveness of Prevention Activity?

- ✓ Extensiveness and quality of training
- ✓ Supervision of the activity
- ✓ Principal support for the activity
- ✓ The degree of structure or scriptedness of the activity
- ✓ Local responsibility for initiating the activity
- ✓ Use of multiple sources of information, including "experts"
- ✓ Activity is a part of the regular school program